STATEMENT OF BASIS

Minor Air Quality Permit
Permit Renewal

Load King
Elk Point, South Dakota

South Dakota Department of Environment and Natural Resources

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1.0 Operational Description

Terex Load King manufactures construction trailers from steel plating using plasma cutting to fabricate trailer parts in Elk Point, South Dakota. The primary Standard Industrial Code (SIC) for the facility is 3715 – Truck Trailers. These are establishments primarily engaged in manufacturing truck trailers, truck trailer chassis for sale separately, detachable trailer bodies (cargo containers) for sale separately, and detachable trailer (cargo container) chassis, for sale separately

Terex Load King was issued a minor air quality permit with enforceable limits on January 29, 2007, to avoid the Title V air quality permit program. Terex Load King submitted an application for modification to add an additional paint booth with enforceable limits on March 27, 2008. The modification was approved on June 11, 2008. On November 20, 2008, an administrative amendment changing contact information was approved. On March 9, 2010, an administrative amendment to change the facility name from Terex Load King to Load King Trailers, change permit contact and the responsible official was approved.

1.1 Existing Equipment

Table 1.1 provides a description of the existing permitted equipment at Load King's facility in Elk Point, as outlined in Load King's March 9, 2010, minor air quality permit.

Table 1.1 – Existing Permitted Equipment Information

Unit	Description	Maximum Operating Rate	Control Device
#1	Plant I Bonanza paint booth, model TDD-201860-PDT. The paint booth uses an air atomization method of spraying.	Not applicable	Dry filter pads are used to control particulate emissions.
#2	Plant II - PAINT (10) 1977 Binks paint booth. The booth uses airless and air assisted method of spraying.	Not applicable	Dry filter media to control particulate matter.

On February 1, 2012, the Department of Environment and Natural Resources (Department) received Load King's application to renew its minor air quality permit. Load King stated in a June 5, 2012, email that Unit #2, the 1977 Binks spray booth has been dismantled and is no longer in use.

The application contains forms for other units that will be reviewed including:

- 2007 shotblaster controlled by a 2007 FSX-550 baghouse and also by a 2007 Torit 90-219-5 baghouse; and
- Rupp Air Management System Dry Booth air makeup unit rated at 2.7 MMBtu/hr and fired with natural gas.

Based on email inquiries, Load King also operates an Airco ServoGraph table model BP-120 plasma cutting table with emissions controlled by a water table.

Emissions from these units will be calculated and used to determine the permit status of both the individual unit and the facility.

2.0 NEW SOURCE PERFORMANCE STANDARDS

The Department reviewed the new source performance standards (NSPS) and determined that Load King is not applicable to any NSPS at this time.

3.0 NEW SOURCE REVIEW

3.1 New Source Review

ARSD 74:36:10:01 states that New Source Review (NSR) regulations apply to areas of the state which are designated as nonattainment pursuant to the Clean Air Act for any pollutant regulated under the Clean Air Act. Load King is located in Elk Point South Dakota, which is in attainment or unclassifiable for all the pollutants regulated under the Clean Air Act. Therefore, Load King is not subject to NSR review.

4.0 PREVENTION OF SIGNIFICANT DETERIORATION

4.1 Prevention of Significant Deterioration

A prevention of significant deterioration (PSD) review applies to new major stationary sources and major modifications to existing major stationary sources in areas designated as attainment under Section 107 of the Clean Air Act for any regulated air pollutant. The following is a list of regulated air pollutants under the PSD program:

1. Total suspended particulate (PM);
2. Particulate with a diameter less than or equal to 10 microns (PM10);
3. Particulate with a diameter less than or equal to 2.5 microns (PM2.5);
4. Sulfur dioxide (SO_2);
5. Nitrogen oxides (NOx);
6. Carbon monoxide (CO);
7. Ozone – measured as volatile organic compounds (VOCs);
8. Lead;
9. Fluorides
10. Sulfuric acid mist;
11. Hydrogen sulfide;
12. Reduced sulfur compounds;
13. Total reduced sulfur; and

14. Greenhouse gases (carbon dioxide, methane, nitrous oxide, etc.).

If the source is considered one of the 28 named PSD source categories listed in Section 169 of the federal Clean Air Act, the major source threshold is 100 tons per year of any regulated air pollutant, except for greenhouse gases. The major source threshold for all other sources is 250 tons per year of any regulated air pollutant, except for greenhouse gases.

According to the Clean Air Act, once a pollutant is regulated under any part of the Act, (as was the case with greenhouse gas emissions after the motor vehicle regulations were finalized in March 2010) major new sources or major modifications are subject to the PSD program and Title V air quality operating permit program. Under the Clean Air Act, PSD and Title V air quality operating permits are required for all sources that emit a regulated air pollutant above 100 or 250 tons per year, depending on the source. This threshold, if applied to greenhouse gases, would greatly increase the number of facilities requiring a PSD review or Title V air quality operating permit. Based on administrative necessity, EPA increased these thresholds through the "Tailoring Rule."

On May 13, 2010, EPA issued the final version of the "Tailoring Rule" for greenhouse gas emissions. The major source threshold for greenhouse gases is listed below:

1. New PSD source because of a criteria air pollutant, the major source threshold for greenhouse gases is 75,000 tons per year of carbon dioxide equivalent or more;
2. New PSD source if greenhouse gas emissions are 100,000 tons per year of carbon dioxide equivalent or more;
3. For an existing PSD source because of a criteria air pollutant, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more;
4. For an existing non-PSD source that has the potential to emit 100,000 tons per year of carbon dioxide equivalent emissions or more, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more; and
5. In addition to subsection (2) and (4), a specific greenhouse gas, without calculating the carbon dioxide equivalent, also needs to emit greater than 100 or 250 tons per year, whichever is applicable, to be regulated.

Load King is not one of the 28 named PSD source categories, therefore, its PSD threshold is 250 tons per year, except for greenhouse gases.

4.2 Potential Emissions

Annual potential emissions for each applicable pollutant are calculated from the maximum design capacity listed in the application, assuming the unit operates every hour of every day of the year or 8,760 hours per year.

4.3 Spray Booths -Unit #1

The emission factors for the spray booths were derived from the material safety data sheets for the products used in the spray booths. The potential emission rate is estimated from the amount

of paint and solvent used in the spray booths and the amount of time the booths are operated. Load King identified in the permit application that the spray booth operates 6 hours per day for 250 weeks per year (1,500 hours per year). Potential emissions are calculated assuming that the facility operates 24 hours per day 365 days per year (8,760 hours per year). Therefore, the potential emissions for the spray booth will be calculated by multiplying the actual emissions by the ratio in Equation 4-1.

Equation 4-1 – Spray Booth Multiplying Factor

$$\frac{8{,}760 \text{ potential operating hours/year}}{1{,}500 \text{ actual operating hours/year}} = 5.8$$

Potential uncontrolled emissions are those that would occur with no emission controls. Dry filter media are used to control particulate matter; however, the filters do not control volatile organic compound or hazardous air pollutant emissions. Table 4-1 provides a summary of the potential emissions from the spray booth.

Table 4-1 – Spray Booth Potential Emissions (tons per year)

Pollutant	Actual Emissions	Potential Emissions
Volatile Organic Compounds (VOCs)	10.06	58.3
Hazardous Air Pollutants (HAPs)	0.11	0.6

4.4 Shot Blasting Units:

Load King operates one shot blasting unit – a 2007 5.0 Hp unit that uses steel shot to prepare metal for fabrication and painting. The emission factors used to determine the potential particulate emissions were obtained from AP-42 13.2.6 Abrasive Blasting, Table 13.2.2.6-1. The emission factor for sand blasting is 27 pounds of particulate matter per 1,000 pounds of abrasive used. Section 13.2.6.3 states that particulate matter emissions using steel shot are about 10% of the total emissions using sand. Therefore, an emission factor of 2.7 pounds of particulate matter per 1,000 pounds of abrasive will be used. A similar reduction for the particulate matter 10 microns in diameter or less (PM10) emissions (sand blasting – 13 pounds of PM10 per 1,000 pounds; steel shot 1.3 pounds of PM10 per 1,000 pounds) will be used.

Load King stated that 24,000 pounds per year of steel shot are used in the unit. The Department will use Equation 4.2 to determine the potential emissions from the shot blast unit.

Equation 4-2 - Potential Shotblast Emissions

$$Emissions\left(\frac{tons}{year}\right) = EF\left(\frac{pounds\ emissions}{pound\ steel\ shot}\right) \times Steel\ \ Shot\left(\frac{pounds}{year}\right) \times \left(\frac{8{,}760\ hours}{1{,}000\ hours}\right) \div 2{,}000\left(\frac{pounds}{ton}\right)$$

Table 4-2 – Potential Emissions – Shotblast Units (tons per year)

Unit #	Actual Hours Operated	Steel Shot Used (pounds)	Potential Emissions	
			PM	PM10
Shotblast equipment	1,000	24,000	0.3	0.1

4.5 Fuel Burning Units

AP-42 emission factors for combustion units are based on the designed gross heat input rate of each unit. Small industrial units range from 3.5 to 100 million Btus per hour of heat input. The Department will apply the emission factors for the small industrial units for all the fuel burning units. The particulate matter (PM), particulate matter less than 10 microns (PM10), particulate matter less than 2.5 microns (PM2.5), carbon monoxide (CO), carbon dioxide (CO2), volatile organic compounds (VOC), sulfur dioxide (SO2), nitrogen oxide (NOx), and total hazardous air pollutants (HAP) emission factors for the natural gas combustion units are taken from AP-42, 5th Edition, Tables 1.4-1, -2, -3 & -4, 7/98 and are summarized in Table 4-3.

Table 4-3 – Fuel Burning Unit Emission Factors (pounds per million standard cubic feet)

PM	PM10/PM2.5	CO	CO2	VOC	S02	NOx	Total HAPs
7.6	5.7	84	120,000	5.5	0.6	100	1.89

The potential emissions from the fuel burning unit are calculated using equation 4-3 and the emissions are summarized in Table 4-4.

Equation 4-3 – Emission factor

$$Emissions\left(\frac{tons}{year}\right) = Input\left(\frac{MMBtus}{hour}\right) \times 8{,}760\left(\frac{hours}{year}\right) \div 1{,}020\left(\frac{MMBtus}{MMcf}\right) \times EF\left(\frac{pounds}{MMcf}\right) \div 2{,}000\left(\frac{pounds}{ton}\right)$$

Table 4-4 – Fuel Burning Unit Potential Emission (tons per year)

Unit #	Input Capacity (MMBtus per hour)	PM	PM10 PM2.5	CO	CO2	SO2	NOx	VOC	Total HAPs
Air Make Up Unit	2.7	0.1	0.1	1.0	1,391	0.0	1.2	0.1	0.0

4.6 Plasma Cutting Systems:

Load King operates a Airco ServoGraph table model BP-120 plasma cutting table with emissions controlled by a water table. The Department will use emission factors from a fume emission testing conducted by Hypertherm in February 1999, which was submitted with Kolberg-Pioneer's 2011 application to renew its air quality permit. The study quantified the emissions of particulate matter, nitrogen oxide and various metals emitted when cutting metal on the ALLTRA Burn Tables. This study measured emissions from cutting on a "dry" table. A 1994 study of "The Emission of Fume, Nitrogen Oxides and Noise in Plasma Cutting of Stainless and Mild Steel" conducted by The Swedish Institute of Production Engineering Research found that emissions from a semi-dry plasma table as used by Load King reduced particulate emissions by a factor of 10 and nitrogen oxide emissions by 50%. Table 4-5 summarizes the emission factors.

Table 4-5 - Plasma Cutting Emission Factors (pounds per hour)

Unit #	PM	NOx
Airco ServoGraph	0.105	0.165

Load King stated that the plasma cutting table operates approximately 1,500 hours per year. The Department will use Equation 4-4 to determine the potential emissions from the plasma table.

Equation 4-4 - Potential Plasma Table Emissions

$$Emissions\left(\frac{tons}{year}\right) = EF\left(\frac{pounds}{hour}\right) \times 8{,}760\left(\frac{hours}{year}\right) \div 2{,}000\left(\frac{pounds}{ton}\right)$$

Table 4-6 summarizes the potential emission for the plasma cutting.

Table 4-6 - Plasma Cutting Emission Factors (tons per year)

Unit #	PM	NOx
Airco ServoGraph	0.5	0.7

4.6 Potential Uncontrolled Emission

The potential emissions were calculated assuming that the facility operates 24 hours a day, 365 days per year. Uncontrolled potential emissions are those that would occur with no emission controls. There is no pollution control equipment for volatile organic compounds (VOCs) and hazardous air pollutants (HAPs) associated with the spray booth operations. Dry filter pads are used to control particulate emissions. Therefore, the potential uncontrolled and controlled VOC and HAP emissions are equal. The potential emissions for the existing operations are summarized in Table 4-7.

Table 4-7 - Summary of Potential Emissions (tons per year)

Unit #	PM	PM10 PM2.5	CO	CO2	SO2	NOx	VOC	HAPs
#1 Paint Booth	-	-	-	-	-	-	58.3	0.6
Air Makeup	0.1	0.1	1.0	1,390	0	1.2	0.1	0.0
Shot Blast	0.3	0.1	-	-	-	-	-	-
Plasma Arc	0.5	0.5	-	-	-	0.7	-	-
Total	**1**	**1**	**1**	**1,390**	**0**	**2**	**58**	**1**

Load King's potential particulate matter, carbon monoxide, sulfur dioxide, nitrogen oxide and volatile organic compound emissions are less than 250 tons per year and its greenhouse gases are less than 100,000 tons per year. Therefore, Load King is considered a minor source under the PSD program and is not subject to PSD requirements.

5.0 Maximum Achievable Control Technology Standards

The Department reviewed the maximum achievable control technology (MACT) standards and determined that the following standards may be applicable.

5.1 ARSD 74:36:08:37 40 CFR Part 63, Subpart MMMM

The Department reviewed the national emission standards and determined the proposed construction project may be applicable to 40 CFR Part 63, Subpart MMMM. Subpart MMMM is subject to owners or operators of miscellaneous metal parts and product surface coating facilities. Miscellaneous metal parts and products include, but are not limited to, metal components of the following types of products as well as the products themselves: motor vehicle parts and accessories, bicycles and sporting goods, recreational vehicles, extruded aluminum structural components, railroad cars, heavy duty trucks, medical equipment, lawn and garden equipment, electronic equipment, magnet wire, steel drums, industrial machinery, metal pipes, and numerous other industrial, household, and consumer products.

Surface coating is the application of coating to a substrate using, for example, spray guns or dip tanks. When application of coating to a substrate occurs, then surface coating also includes associated activities, such as surface preparation, cleaning, mixing, and storage. However, these activities do not comprise surface coating if they are not directly related to the application of the coating. Coating application with handheld, non-refillable aerosol containers, touch-up markers, marking pens, or the application of paper film or plastic film which may be pre-coated with an adhesive by the manufacturer are not coating operations for the purposes of this subpart.

A facility is subject to this subpart if it uses 946 liters (250 gallons (gal)) per year, or more, of coatings that contain hazardous air pollutants (HAP) in the surface coating of miscellaneous metal parts and products as described above; and that is a major source, is located at a major source, or is part of a major source of emissions of HAP. A major source of HAP emissions is any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit any single HAP at a rate of 9.07 megagrams (Mg) (10 tons) or more per year or any combination of HAP at a rate of 22.68 Mg (25 tons) or more per year.

Currently, Load King does use more than 250 gallons per year of several coatings – however, according to the submitted MSDS sheets, none of these coatings contain HAPs. Load King has potential HAP emissions of less than 10 tons per year of a single HAP and less than 25 tons per year of any combination of HAPs. Therefore, this subpart is not applicable to Load King.

5.2 ARSD 74:36:08: 40 CFR Part 63, Subpart HHHHHH

The Department reviewed the national emission standards and determined that Load King may be subject to 40 CFR Part 63, Subpart HHHHHH is applicable to owners or operators of paint stripping operations, miscellaneous surface coating area sources and the spray application of coatings containing compounds of chromium (Cr) lead (Pb), manganese (Mn), nickel (Ni), or cadmium (Cd), to any part or product made of metal or plastic, or combinations of metal and plastic that are not motor vehicles or mobile equipment. An area source of HAP is a source of HAP that is not a major source of HAP, is not located at a major source, and is not part of a major source of HAP emissions.

This subpart applies to sources using spray booths, ventilated prep stations, curing ovens, and associated equipment; spray guns and associated equipment, spray gun cleaning equipment

This subpart defines spray-applied coating operations as coatings that are applied using a hand-held device that creates an atomized mist of coating and deposits the coating on a substrate. For the purposes of this subpart, spray-applied coatings do not include the following materials or activities:

1. Coatings applied from a hand-held device with a paint cup capacity that is equal to or less than 3.0 fluid ounces (89 cubic centimeters); and
2. Surface coating application using powder coating, hand-held, non-refillable aerosol containers, or non-atomizing application technology, including, but not limited to, paint brushes, rollers, hand wiping, flow coating, dip coating, electro-deposition coating, web coating, coil coating, touch-up markers, or marking pens.

Motor vehicle and mobile equipment surface coating means the spray application of coatings to assembled motor vehicles or mobile equipment. For the purposes of this subpart, it does not include the surface coating of motor vehicle or mobile equipment parts or subassemblies at a vehicle assembly plant or parts manufacturing plant. Load King is not coating an "assembled mobile equipment". Once the parts are coated, Load King completes the trailer, etc. by installing the electrical, hydraulic, air and braking components.

The Material Safety Data Sheets submitted by Load King for the various paints and coatings indicate that the paints and coatings do not contain compounds of chromium, lead, manganese, nickel, or cadmium. Therefore, this subpart is not applicable to Load King

5.3 ARSD 74:36:08:119 – 40 CFR Part 63, Subpart XXXXXX

The MACT standard for the control of HAPs for nine metal fabrication and finishing area source categories was finalized on July 23, 2008. An area source has the potential to emit less than 10 tons per year of a single HAP or 25 tons per year of a combination of HAPs. The provisions of this subpart are applicable to an area source that is primarily engaged in the operations in one of the following nine source categories:

1. Electrical and Electronic Equipment Finishing Operations (NAICS codes 335999 and 335312);
2. Fabricated Metal Products (NAICS codes 332117 and 332999);
3. Fabricated Plate Work (Boiler Shops) (NAICS codes 332313, 332410, and 332420);
4. Fabricated Structural Metal Manufacturing (NAICS code 332312);
5. Heating Equipment, except Electric ((NAICS code 333414);
6. Industrial Machinery and Equipment Finishing Operations (NAICS codes 333120, 333132 and 333911);
7. Iron and Steel Forging (NAICS code 33211);
8. Primary Metal products Manufacturing (NAICS code 332618); and
9. Valves and Pipe Fittings (NAICS code 332919).

The provisions of this subpart are applicable to new and existing sources primarily engaged in one of the nine operations listed above that use materials that contain or have the potential to emit metal fabrication or finishing metal HAP. Load King has a Standard Industrial Classification Code of 3715 and a North American Industry Classification System code of 336212. Load King is not one of the nine operations applicable to this subpart.

6.0 State Air Emission Limits

6.1 State Requirements

Total suspended particulate and sulfur dioxide emission limits are applicable to fuel burning units and process industry units. Visible emissions are applicable to any unit that discharges to the ambient air. In accordance with ARSD 74:36:12, a facility may not discharge into the ambient air more than 20 percent opacity for all units. Load King must control the opacity at less than 20 percent for the all units.

In accordance with ARSD 74:36:04:03(4), a unit that has a heat input capability of not more than 3.5 MMBtus per hour is exempt from permitting. The air makeup unit has a heat input capability of 2.7 MMBtus per hour and is exempt from permitting.

Under ARSD 74:36:05:04.01(7) any unit that has the potential to emit two tons or less per year of any criteria pollutant before the application of control equipment may be considered an insignificant activity. The plasma burn table has the potential to emit less than two tons per year of any criteria pollutant and is exempt from permitting

The shotblast unit has potential emissions of 0.3 tons per year. Under ARSD 74:36:05:04.01(7) any unit that has the potential to emit two tons or less per year of any criteria pollutant before the application of control equipment may be considered an insignificant activity. The shotblast unit is considered exempt from permitting.

6.2 Performance Testing

Load King is required to maintain records on the amount of volatile organic compounds emitted from its operations to determine compliance with permit limits on a monthly basis and report the results to the Department on a periodic basis. Therefore, Terex Load King is not required to conduct performance tests.

6.3 Minor Source

Any source operating in South Dakota that meets the requirements of the Administrative Rules of South Dakota (ARSD) 74:36:05:03 is required to obtain a Title V air quality permit. Load King's particulate matter, sulfur dioxide (SO2), nitrogen oxides (NOx), carbon monoxide (CO) and volatile organic compound (VOC) emissions are less than 100 tons per year and hazardous air pollutant emissions are less than 10 tons per year for a single hazardous air pollutant and 25 tons per year of a combination of hazardous air pollutant. Based on the emission estimates, Load King is considered a minor source.

6.4 Summary of Applicable Requirements

Any source operating in South Dakota that meets the requirements of ARSD 74:36:04:02 is required to obtain a minor air quality permit. Based on the facility's potential emissions, Load King is a minor source for volatile organic compounds because the potential emissions are greater than 25 tons per year but less than 100 tons per year. Load King is a minor source for hazardous air pollutants because the potential emissions are less than 10 tons per year for a single hazardous air pollutant and less than 25 tons per year for a combination of hazardous air pollutants. Therefore, Load King will be required to operate within the requirements stipulated in the following regulations under the minor permit program:

- ARSD 74:36:04 – Operating Permits for Minor Sources;
- ARSD 74:36:12 - Control of Visible Emissions.

7.0 Recommendation

Based on the information submitted in the air quality permit application, the Department recommends that Load King's existing minor permit be renewed. Any questions on this review should be directed to Keith Gestring, Natural Resources Engineer, Department of Environment and Natural Resources.